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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/688,889

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Tetsuya Yoshikawa

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OBLON, SPIVAK, MCCLELLAND MAIER & NEUSTADT, P.C.
1940 DUKE STREET
ALEXANDRIA, VA 22314

EXAMINER

RIGGLEMAN, JASON PAUL

ART UNIT

PAPER NUMBER

1792

NOTIFICATION DATE

DELIVERY MODE

05/21/2008

ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

patentdocket@oblon.com
oblonpat@oblon.com
jgardner@oblon.com

Office Action Summary	Application No. 10/688,889	Applicant(s) YOSHIKAWA ET AL.	
	Examiner JASON P. RIGGLEMAN	Art Unit 1792	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 07 February 2008.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-9, 13, 16-19 and 21 is/are pending in the application.
- 4a) Of the above claim(s) 1-6 and 16-19 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 7-9, 13 and 21 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 21 October 2003 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input checked="" type="checkbox"/> Other: <u>Foreign reference</u> . |

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 2/7/2008 has been entered.

Status of Claims

2. Applicant's reply filed on 2/7/2008 is acknowledged. Current pending claims are 1-9, 13, 16-19, and 21. Claims 7 and 9 are amended. Claims 1-6 and 16-19 are withdrawn. Claim 21 is new. Claim 8 is original. Claims 10-12, 14-15, and 20 are cancelled.

Response to Arguments

3. Applicant's arguments with respect to claims 7-9, 13, and 21 have been considered but are moot in view of the new ground(s) of rejection. Note: the applicant's arguments are not commensurate in scope with the claims. The applicant argues that the art does not teach that the fluid is supplied *perpendicular* to the surface of the wafer to be distributed *radially outward* to create turbulence at the surface and effectively dry the wafer. These limitations are not claimed.

Claim Objections

4. Claims 8-9, 13, 21 objected to because of the following informalities: the term "defined" is assumed to be -- claimed. Appropriate correction is required.

5. Claim 21 is objected to because of the following informalities: it is an exact duplicate of claim 8. Appropriate correction is required.

6. Claim 7 is objected to because of the following informalities: the preamble phrase "for supplying a high pressure fluid to a processing object to apply a high pressure processing to the processing object" is *extremely* confusing. Appropriate correction is required.

Drawings

7. The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the "introduction wall" must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.

Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Claim Rejections - 35 USC § 112

8. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

9. Claim 13 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. The claim is not understood. It is suggested the applicant claim the structure of the closure plate rather than the expected result of the structure.

10. The term "high pressure" in claim 7 is a relative term which renders the claim indefinite. The term "high pressure" is not defined by the claim, the specification does not provide a standard for ascertaining the requisite degree, and one of ordinary skill in the art would not be reasonably apprised of the scope of the invention.

11. Claim 7 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. The term "integrally linked" is unclear.

12. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

13. Claim 7 is rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. The introduction wall positioned above an entire surface of the processing object on the mounting table is new matter. Fig. 1, shows a fluid introduction passage 20. Such a passage refutes that the wall is above the entire surface of the wafer since there is a hole 20 in the wall.

Claim Rejections - 35 USC § 103

14. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

15. Claims 7-9 and 21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kusumoto et al. (US Patent No. 4994301) in view of Shang et al. (US Patent No. 6647993).

16. Kusumoto et al. teaches a high-pressure processing apparatus having a high pressure chamber (1) adapted to contain a wafer (3). The high pressure chamber has an introduction wall (5) provided with a fluid introduction passage (6). The introduction wall is positioned above an entire surface of the processing object on the mounting table. The high pressure chamber has a side wall (1a) "integrally linked" to an outer peripheral part of the introduction wall and surrounding the mounting table. The mounting table (2) has a rotating mechanism which rotates the wafer and mounting table, Fig. 5. A fluid dispersion mechanism (6a) disperses the fluid supplied from the fluid introduction passage. The fluid discharger distributes the fluid supplied from the fluid dispersion mechanism "outward" along the surface of the wafer and discharges it outside the high pressure chamber. The fluid dispersion mechanism includes a closure plate formed with a plurality of holes. The closure plate is located between the

mounting table and the introduction wall (opposed). It should be noted that the fluid supplier could be adapted to supply a supercritical fluid.

17. Kusumoto et al. does not teach the fluid discharge passage provided in a sidewall of the high pressure chamber at an outward position relative to the processing object and approximately parallel to the surface of the wafer; however, Shang et al. teaches a gas exhaust 30 parallel to the surface of the wafer. It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the exhaust 7 of Kusumoto et al. with Shang et al. to create a parallel flow outlet to achieve the expected result.

18. Kusumoto et al., as modified by Shang et al., does not teach that the closure plate is fitted to an internal surface of the side wall; however, it has been held that an obvious choice in design (with no showing of criticality) is not patentable (*In re Kuhle* 188 USPQ 7). It would have been obvious to one of ordinary skill in the art at the time of the invention to modify Kusumoto et al., as modified by Shang et al., to create a larger shower portion to achieve the expected result.

19. Claim 13 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kusumoto et al. (US Patent No. 4994301) in view of view of Shang et al. (US Patent No. 6647993) further in view of Minegishi et al. (Japanese Patent Publication JP60191281).

20. Kusumoto et al. teaches a high-pressure processing apparatus having a high pressure chamber (1) adapted to contain a wafer (3). The high pressure chamber has an introduction wall (5) provided with a fluid introduction passage (6). The introduction wall is positioned above an entire surface of the processing object on the mounting

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table. The high pressure chamber has a side wall (1a) “integrally linked” to an outer peripheral part of the introduction wall and surrounding the mounting table. The mounting table (2) has a rotating mechanism which rotates the wafer and mounting table, Fig. 5. A fluid dispersion mechanism (6a) disperses the fluid supplied from the fluid introduction passage. The fluid discharger distributes the fluid supplied from the fluid dispersion mechanism “outward” along the surface of the wafer and discharges it outside the high pressure chamber. The fluid dispersion mechanism includes a closure plate formed with a plurality of holes. The closure plate is located between the mounting table and the introduction wall (opposed). It should be noted that the fluid supplier could be adapted to supply a supercritical fluid.

21. Kusumoto et al. does not teach the fluid discharge passage provided in a sidewall of the high pressure chamber at an outward position relative to the processing object and approximately parallel to the surface of the wafer; however, Shang et al. teaches a gas exhaust 30 parallel to the surface of the wafer. It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the exhaust 7 of Kusumoto et al. with Shang et al. to create a parallel flow outlet to achieve the expected result.

22. Kusumoto et al., as modified by Shang et al., does not teach that the closure plate is fitted to an internal surface of the side wall; however, it has been held that an obvious choice in design (with no showing of criticality) is not patentable (*In re Kuhle* 188 USPQ 7). It would have been obvious to one of ordinary skill in the art at the time

of the invention to modify Kusumoto et al., as modified by Shang et al., to create a larger shower portion to achieve the expected result.

23. In regards to claim 13, Kusumoto et al., as modified above, does not teach, the configuration of the holes in the closure plate; however, Minegishi et al. teaches the claimed vent hole configuration formed in a plate passing a CVD reaction gas, Fig. 2B. It would have been obvious to one of ordinary skill in the art at the time of the invention to modify Kusumoto et al. with Minegishi et al. to create a shower which effectively treats the entire top surface of the wafer evenly distribute the fluid to achieve the expected result.

Conclusion

24. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Okayama et al. (US Patent No. 6334983) teaches a showerhead processing a gas with a side-gas outlet and non-rotating mounting table. Omstead et al. (US Patent No. 6508197) teaches a showerhead processing a gas with a side-gas outlet and non-rotating mounting table. Watanabe et al. (US Patent Publication No. US2002/0137334) teaches a showerhead processing a gas with a side-gas outlet and non-rotating mounting table. *Yahalom et al. (US Patent Publication NO. US2003/0024826) teaches a shower-plate which creates turbulent flow at the center and laminar flow at the periphery, Figs. 2-3, paragraphs [0035] – [0038].*

25. Any inquiry concerning this communication or earlier communications from the examiner should be directed to JASON P. RIGGLEMAN whose telephone number is (571)272-5935. The examiner can normally be reached on M-F, 8:30-5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Michael Barr can be reached on 571-272-1414. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Michael Barr/
Supervisory Patent Examiner, Art Unit 1792

Jason P Riggelman
Examiner
Art Unit 1792

/J. P. R./
Examiner, Art Unit 1792